--The extent to which the fiber-reinforced and/or fiber-bundle-reinforced composite materials with a ceramic matrix, that are referred to below as CMC composite materials for short, can be used in the field of applications for which temperature resistance is required at high temperatures, depends not in the least on the structure of the matrix of the composite materials. As long as the matrix of the composite materials is composed of various phases, the matrix structure at the surface of the CMC composite materials can be damaged by eluting of a matrix phase which melts at lower temperatures and which can be attacked by chemical processes such as oxidation, as a result of which the period of use of the CMC composite materials is restricted nowadays. Those problems become all the greater if a CMC material is additionally exposed to mechanical abrasion. Upon that occurrence, new crystallites of the matrix which are set free all the time can be attacked at lower temperatures and are decomposed very quickly. Moreover, gaps in the matrix structure which have been originated by the eluted crystallites offer a possibility for increased mechanical attack. Furthermore, the structure of the matrix with respect to cracks also plays a part in stress acting on CMC materials by mechanical loading, because in the case of a matrix with cracks, matrix components can also be

A2

A1 Cont

mechanically pulled out of the composite material much more easily.--

---

Replace the paragraph beginning at page 7, line 10, with the following:

A2

--It is accordingly an object of the invention to provide a fiber-bundle-reinforced composite material having a ceramic matrix, a method for manufacturing a composite material and a method for manufacturing elements formed of a composite material, which overcome the hereinafore-mentioned disadvantages of the heretofore-known materials and methods of this general type, in which the materials have an improved matrix as compared with the prior art, with a phase composition as homogeneous as possible and at most a fine crack structure and in which the materials can be manufactured according to the heretofore-used methods.--

---

Replace the paragraph beginning at page 7, line 22, with the following:

A3

-- With the foregoing and other objects in view there is provided, in accordance with the invention, a composite material, comprising a ceramic matrix; and two different

A3 Cont

fractions of fiber bundles including a reinforcing fiber bundle fraction and a matrix fiber bundle fraction having different average fiber bundle lengths, the fractions of fiber bundles separated by a minimum in a total fiber bundle distribution of the weight of the fiber bundles being a function of a fiber bundle length.--

Replace the paragraph beginning at page 8, line 12, with the following:

A4

--Composite materials according to the invention possess a substantial reinforcing component of the fiber bundles, i.e. bundles of single fibers. Single fibers, on the other hand, are present in the composite material at most to such an extent that they do not contribute substantially to the reinforcement of the composite material.--

Replace the paragraph beginning at page 9, line 20, with the following:

A5

-- As a result of the substantially smaller length and mostly also smaller thickness and height of the fiber bundles of the matrix fiber bundle fraction, compared with the length and the other dimensions of the reinforcing fiber bundle

fraction, the matrix fiber bundles can be disposed freely in the texture of the reinforcing fiber bundles and, in particular, can fill the space between the reinforcing fiber bundles in a well-mannered way. This results in an increased density of the CMC composite materials according to the invention and in a matrix structure which becomes substantially more homogeneous. This is because a substantially finer pore system is running through the fiber bundle skeleton of the composite materials according to the invention before the siliconizing than is heretofore known from the prior art. Furthermore, the geometrically smaller matrix fiber bundles also influence the crack formation in the matrix because the linkage of the matrix to the matrix fiber bundles does not lead to the same stress in the matrix as with the reinforcing fiber bundles. In both cases there is indeed a different coefficient of thermal expansion between the matrix and the fiber bundles. However, in the case of the matrix fiber bundles, stress is also originated in the matrix fiber bundles due to variation of the temperature of the fiber bundle/matrix system, which does not take place in the case of the large rigid reinforcing fiber bundles. Accordingly, the content of the stress is reduced in the matrix by the added matrix fiber bundles, as a result of which the matrix of the CMC composite materials according to the invention possesses a crack system with fewer and

A5
Cont

smaller cracks. This effect is intensified by the fact that, when the matrix is reacting with the fiber bundles, it is particularly the matrix fiber bundles having smaller dimensions which are attacked. As a result thereof they lose mass so that their reduced remaining mass accommodates stress to an increased extent due to the different thermal expansion of the fiber bundles and the matrix.--

A5 Cont

Replace the paragraph beginning at page 11, line 9, with the following:

-- With the objects of the invention in view, there is also provided a method for manufacturing composite materials reinforced with fiber bundles and having a ceramic matrix, which comprises providing two different fractions of the fiber bundles including a reinforcing fiber bundle fraction and a matrix fiber bundle fraction with different average fiber bundle lengths, as basic materials; and providing a total fiber bundle distribution of the weight of the fiber bundles as a function of a length of the fiber bundles with a minimum between the average fiber bundle lengths of the reinforcing fiber bundle fraction and the matrix fiber bundle fraction.--

A6

Replace the paragraph beginning at page 11, line 21, with the following:

A7

-- The invention is distinguished in that the heretofore-known methods for the manufacture of CMC composite materials can be used for the manufacture of the composite materials according to the invention, if they use a reinforcing fiber bundle fraction and a matrix fiber bundle fraction during the manufacture of the composite materials as described above, instead of only one fiber or fiber bundle fraction as heretofore. In this way the CMC composite materials according to the invention are manufactured only by the change of the raw materials, unless the otherwise known advantages of the heretofore existing methods of manufacture fall behind.--

Replace the paragraph beginning at page 17, line 19, with the following:

A8

--These selected distributions are described below and recited in the claims as so-called fiber bundle distributions. This should be understood in the following to be the weight distribution of the fiber bundles in relation to the length of the fiber bundles. In other words, it can

A8 Cont

be deduced from the distributions, what weight the fiber bundles of a certain fiber bundle length have or what weight fraction the fiber bundles of a certain fiber bundle length have of the total weight of the fiber bundles.--

Replace the paragraph beginning at page 25, line 1, with the following:

A9

-- With methods of manufacture according to the invention for producing CMC composite materials, having a matrix which contains carbon and/or carbides, for example C/SiC composite materials, the binders are mostly carbonized in a further process step.--

Replace the paragraph beginning at page 31, line 1, with the following:

A10

--Fig. 3 shows a total fiber bundle distribution 10 of a sieve fraction which results, for example, if a composite material containing C-fiber bundles was ground and a grinding stock was separated in a screening plant into individual sieve fractions. During the sieving, not only fiber bundles of a fiber bundle distribution 11 intended for the fraction pass through the sieve, but it is also possible for a certain

A10 Cont

fraction of very long fiber bundles to pass lengthwise through sieve apertures, as long as the cross section of the fiber bundle allows it. The result of this is that each sieve fraction has a fraction of overlong fiber bundles having a distribution 12 in Fig. 3 above the distribution of the actual sieve fraction 11. The two distributions 11 and 12 add up to the total fiber bundle distribution 10 of a sieve fraction. However, the width at half maximum 13 of the sieve fraction is not influenced by the fraction of overlong fiber bundles.--

---

Replace the Abstract with the following paragraph:

A11

-- A composite material includes a ceramic matrix and two different fractions of fiber bundles, namely a reinforcing fiber bundle fraction and a matrix fiber bundle fraction having different average fiber bundle lengths. The fractions of fiber bundles are separated in a total fiber bundle distribution relative to a fiber bundle length by a minimum. A method for manufacturing a composite material and a method for manufacturing elements formed of a composite material are also provided.--

---